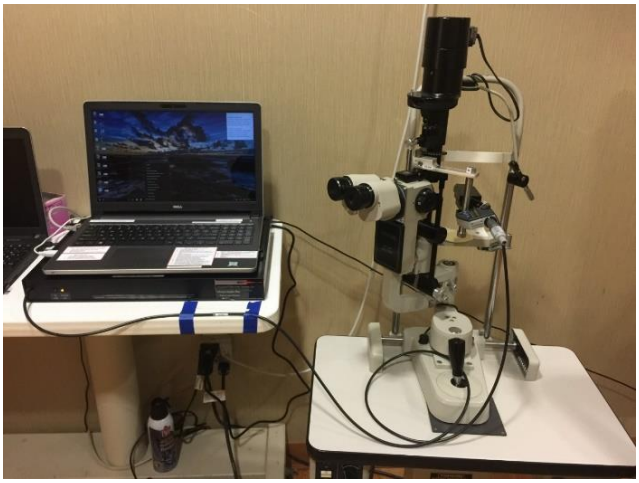
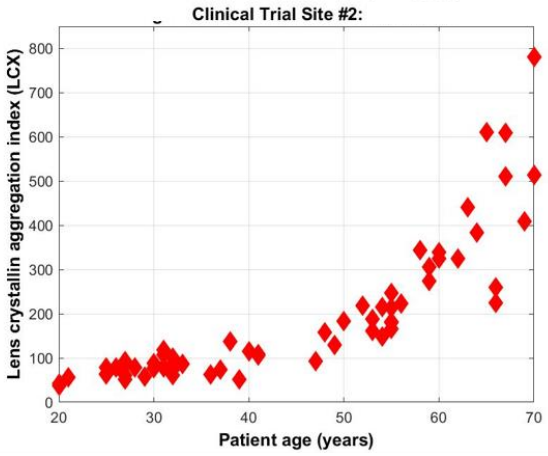
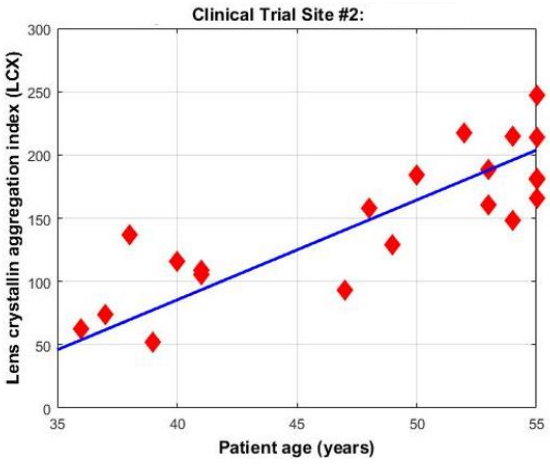
VISION INDEX PEN$_{DX}$

An Ophthalmic Diagnostic Device for the Lens



The Vision Index Pen (VIP) is a non-invasive, *in vivo,* ophthalmic diagnostic device, which utilizes dynamic light scattering (DLS) to characterize the dominant temporal signature of the structural proteins in the human lens. Temporal fluctuations on a time scale ranging from 25 ns to several seconds can be captured in a single measurement. The faster time scales correspond to the motion of small molecular constituents, such as, the different types of crystallins in the lens cytoplasm. DLS can track changes in the time scales, which arise with aggregation of the crystallins. Over the course of normal aging, aggregation of the crystallins leads to cataract formation and loss of accommodation. The VPI device can track these molecular changes in the lens long before they become clinically observable. The aggregated state of the lens is expressed by the Lens Crystallin Index (LCX), which is extracted from spatially localized, *in vivo* measurement of autocorrelation of the backscattered laser light. The figure below shows the observed LCX changes from a recent human subject observational clinical study used to assess the efficacy of the VIP device. The expanded view shows that the LCX value changes significantly for human subjects in over the age range of 35 years to 55 years. This age window is critical for administration of preventive therapeutic agents for intercepting the progression of presbyopia and cataracts.





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